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List of plants collected above timber line on Pikes Peak, with altitudinal extensions and notes

Blanche Soth

Experts might be able to differentiate a few other varieties and species of grasses and sedges in addition to the conspicuous ones given in the following list of plants collected above the timber line on Pikes Peak; otherwise this list is exhaustive and my determinations have been corrected and verified by the submission of doubtful specimens to Dr. P. A. Rydberg and Dr. Aven Nelson, both of whom have been most kind in this respect as well as in giving me information upon doubtful points. They have my sincere thanks for their interest and assistance.

1. Achillea lanulosa Nutt.
2. Aconitum columbianum Nutt.
3. Adoxa moschatalina L.
4. Agoseris aurantiaca (Hook.) Greene
   (*Troximon aurantiacum* Hook.)
5. Agropyrum Scribneri Vasey
6. Allium pikeanum Rydb.
7. Alsinopsis obtusiloba Rydb.
   (*Arenaria sajanensis* Willd.)
8. Alsinopsis propinqua Rydb.
9. Androsace carinata Torr.
10. Androsace subumbellata (A. Nels.) Small
11. Angelica Grayi C. & R.
12. Antennaria aprica Greene
13. Antennaria media Greene
14. Antennaria microphylla Rydb.
15. Antennaria nardina Greene
16. Antennaria rosea (Eat.) Greene
17. Aquilegia coerulea James
18. Aquilegia saximontana Rydb.
19. Arabis Drummondii A. Gray
20. Arenaria Fendleri A. Gray
21. Artemisia Pattersonii A. Gray
22. Artemisia scopulorum A. Gray

23. Bistorta bistortoides (Pursh) Small
24. Bistorta vivipara (L.) S. F. Gray
25. *Boykinia Jamesii* (Torr.) Engler
   [Telesonix Jamesii (Torr.) Raf.]

26. Calamagrostis purpurascens R. Br.
27. Caltha leptosepala Hook.
28. Campanula rotundifolia L.
29. Campanula uniflora L.
30. Carduus scopulorum Greene
31. Carex alpina Sw.
32. Carex capillaris L.
33. Carex chalciolepis Holm
34. Carex ebenea Rydb.
35. Carex festiva Dewey
36. Carex melanocephala Turcz.
37. Carex petasata Dewey
38. Carex rupestris All.
39. Carex scopulorum Holm
40. Castilleja lancifolia Rydb.
41. Castilleja occidentalis Torr.
42. Castilleja sulphurea Rydb.
43. Cerastium beeringianum C. & S.
44. Cerastium oreophilum Greene
45. Chamaenerion angustifolium (L.) Scop.
46. Chionophila Jamesii Benth.
47. Chondrophylla americana (Engelm.) A. Nels.
48. Claytonia megarrhiza (A. Gray) Parry
49. Clementsia rhodantha (A. Gray) Rose
50. Conioselinum scopulorum (A. Gray) C. & R.

51. Dasiphora fruticosa (L.) Rydb.
52. *Deschampsia caespitosa alpina* Vasey
   [D. alpicola Rydb.]
53. Dodecatheon pauciflorum (Durand) Greene

54. Draba aurea Wahl.
55. Draba Parryi Rydb.
56. Draba streptocarpa A. Gray
57. Dryas octopetala L.

58. Elephantella groenlandica (Retz.) Rydb.
59. Epilobium anagallidifolium Lam.
60. Epilobium ovatifolium Rydb.
61. Epilobium stramineum Rydb.
62. Erigeron elatior (A. Gray) Greene
63. Erigeron formosissimus Greene
64. Erigeron pinnatisectus (A. Gray) A. Nels.
65. Erigeron simplex Greene
66. Erigeron Smithii Rydb.
67. Eritrichium argenteum Wight
68. Erysimum oblanceolatum Rydb.

69. Festuca brachyphylla Schultes
70. Festuca ovina ingrata Hackel
71. Fragaria glauca Wats.
72. Filix fragilis (L.) Und.

73. *Gentiana Parryi* Engelm.
[Dasystephana Parryi (Engelm.) Rydb.]
74. *Gentiana plebeja* Cham.
[Amarella plebeja (Cham.) Greene]
75. *Gentiana Romanzovii* Ledeb.
[Dasystephana Romanzovii (Ledeb.) Rydb.]

76. Heuchera Hallii A. Gray
77. Heuchera parvifolia Nutt.

78. Juncoides parviflorum (Ehrh.) Coville
[*Luzula parviflora* (Ehrh.) Desv.]
79. Juncoides spicatum (L.) Kuntze
[*Luzula spicata* (L.) D. C.]
80. Juncus castaneus Smith
81. Juncus Drummondii Mey.
82. Juncus triglumis L.

83. *Lewisia pygmaea* (A. Gray) Robins.
[Oreobroma pygmaea (A. Gray) Howell]
84. Lloydia serotina (L.) Sweet
85. Lychnis montana Wats.

86. Machaeranthera aspera Greene
87. Mertensia alpina (Torr.) Don
88. Mertensia ciliata (Torr.) Don

89. Oreochrysum Parryi (A. Gray) Rydb.
90. Oreoxis humilis Raf.
91. Oxyria digyna (L.) Compt.
92. Paronychia pulvinata A. Gray
93. Pedicularis Parryi A. Gray
94. Pentstemon Hallii A. Gray
95. Pentstemon glaucus stenosepalus A. Gray
96. Phacelia sericea Hook.
97. Phleum alpinum L.
98. Poa arctica R. Br.
99. Poa Grayana Vasey
100. Poa phoenicea Rydb.
101. Poa rupicola Nash
102. Polemonium confertum A. Gray
103. Polemonium pulcherrimum Hook.
104. Potentilla bipinnatifida Dougl.
105. Potentilla filipes Rydb.
106. Potentilla glaucophylla Lehm.
107. Potentilla viridior Rydb.
108. Potentilla saximontana Rydb.
109. Primula angustifolia Torr.
110. Primula Parryi A. Gray
111. Pseudocymopterus multifidus Rydb.
112. Pseudocymopterus purpureus (C. & R.) Rydb.

113. Ranunculus inamoenus Greene
114. Rhodiola integrifolia Raf.
115. Rhodiola polygama (Rydb.) B. & R.
116. Ribes lentum (Jones) C. & R.
117. Roripa alpina (S. Wats.) Rydb.
118. Rubus strigosus Michx.
119. Rydbergia grandiflora (Pursh) Greene

120. Salix brachycarpa Nutt.
121. Salix saximontana Rydb.
122. *Saxifraga austromontana* Wieg.
[Leptasea austromontana (Wieg.) Small]
123. Saxifraga cernua L.
124. *Saxifraga chrysantha* A. Gray
[Leptasea chrysantha (A. Gray) Small]
125. Saxifraga debilis Engelm.
126. *Saxifraga flagellaris* Willd.
[Leptasea flagellaris (Willd.) Small]
127. *Saxifraga rhomboidea* Greene
[Micranthes rhomboidea (Greene) Small]
128. Sedum stenopetalum Pursh
129. Senecio atratus Greene
130. Senecio carthamoides Greene
131. Senecio chloranthus Greene
132. Senecio crocatus Rydb.
133. Senecio eremophilus A. Gray
134. Senecio Fendleri A. Gray
135. Senecio pudicus Greene
136. Senecio taraxicoides A. Gray
137. Senecio werneriaefolius A. Gray
138. Selaginella densa Rydb.

139. SIBBALDIA PROCUMBENS L.
140. SIEVERSIA TURBINATA (Rydb.) Greene
141. SILENE ACAULIS L.
142. SOLIDAGO DECUMBENS Greene
143. SOPHIA INCISA (Engelm.) Greene
144. *Stellaria crassifolia* Ehrh.
[ALSINE CRASSIFOLIA (Ehrh.) Britton]
145. *Stellaria umbellata* Turcz.
[ALSINE BAICALENSIS Coville]
146. SWERTIA PALUSTRIS A. Nels.
147. *Synthyris alpina* A. Gray
[BESSEYA ALPINA (A. Gray) Rydb.]
148. TARAXACUM DUMETORUM Greene
149. TETRANEURIS LANATA (Nutt.) Greene
[*Actinella lanata* Nutt.]
150. THALICTRUM ALPINUM L.
151. THLASPI COLORADENSE Rydb.
152. TONESTUS PYGMAEUS (T. & G.) A. Nels.
153. TRIFOLIUM DASYPHYLLUM T. & G.
154. TRIFOLIUM NANUM Torr.
155. TRISETUM SUBSPICATUM (L.) Beauv.
156. VERONICA ALPINA L.
157. *Zygadenus elegans* Pursh
[ANTICLEA ELEGANS (Pursh) Rydb.]

ALTITUDINAL EXTENSIONS

The first column gives the upper limit of altitude according to the Flora of Colorado, the second, the highest altitude at which I found the species on Pikes Peak.

ACHILLEA LANULOSA Nutt	12,000	12,600
ANTENNARIA MICROPHYLLA Rydb	11,000	12,000
ANTENNARIA ROSEA (Eat.) Greene	11,000	12,000
ARABIS DRUMMONDII A. Gray	11,500	12,000
BISTORTA BISTORTOIDES (Pursh) Small	13,000	13,500
BISTORTA VIVIPARA (L.) S. F. Gray	12,000	13,000
CALTHA LEPTOSEPALA Hook	12,000	13,000
CAMPANULA UNIFLORA L	——	13,000
CASTILLEJA SULPHUREA Rydb	10,000	12,000
CARDUUS SCOPULORUM Greene	12,000	13,000
CHAMAENERION ANGUSTIFOLIUM (L.) Scop	10,000	12,600
CHONDROPHYLLA AMERICANA (Engelm.) A. Nels	12,000	13,000
CONIOSELINUM SCOPULORUM (A. Gray) C. & R	11,000	12,000
DASIPHORA FRUTICOSA (L.) Rydb	10,000	12,500
DODECATHEON PAUCIFLORUM (Durand) Greene	8,500	12,000
ELEPHANTELLA GROENLANDICA (Retz.) Rydb	12,000	13,000
EPILOBIUM STRAMINEUM Rydb	11,000	12,000
ERIGERON FORMOSISSIMUS Greene	——	12,000
ERIGERON SIMPLEX Greene	——	13,500
ERIGERON SMITHII Rydb	10,000	12,000
ERYSIMUM OBLANCEOLATUM Rydb	11,000	12,000
FRAGARIA GLAUCA Wats	11,000	12,000
Gentiana plebeja Cham [AMARELLA PLEBEJA (Cham.) Greene]	10,000	12,500
Lewisia pygmaea (A. Gray) Robins [OREOBROMA PYGMAEA (A. Gray) Howell]	12,000	13,000
LYCHNIS MONTANA Wats	——	12,000
MACHAERANTHERA ASPERA Greene	10,000	12,000
OREOXIS HUMILIS Raf	13,000	14,000
PENTSTEMON GLAUCUS STENOSEPALUS A. Gray	12,000	13,000
POTENTILLA BIPINNATIFIDA Dougl	10,000	12,000
POTENTILLA FILIPES Rydb	10,000	12,000
POTENTILLA VIRIDIOR Rydb	——	12,000
PSEUDOCYMOPTERUS MULTIFIDUS Rydb	10,000	12,000
PSEUDOCYMOPTERUS PURPUREUS (C. & R.) Rydb	11,500	12,500
RANUNCULUS INAMOENUS Greene	10,000	12,000
RORIPA ALPINA (S. Wats.) Rydb	——	11,500

Rubus strigosus Michx.	10,000	12,000
Salix brachycarpa Nutt.	11,000	13,000
Saxifraga rhomboidea Greene	12,000	13,000
[Micranthes rhomboidea (Greene) Small]		
Selaginella densa Rydb.	7,000	12,500
Senecio chloranthus Greene	11,000	12,000
Senecio eremophilus A. Gray	10,000	12,000
Senecio werneriaefolius A. Gray	——	11,500
Sophia incisa (Engelm.) Greene	9,000	11,500
Stellaria crassifolia Ehrh.	10,000	12,000
[Alsine crassifolia (Ehrh.) Britton]		
Taraxacum dumetorum Greene	10,000	12,000
Thalictrum alpinum L.	12,000	13,000
Veronica alpina L.	12,000	13,000

NOTES

The timber line on Pikes Peak occurs at an altitude of approximately 11,500 feet. While the trees extend a little higher in a few places, only those plants which were actually growing above the protection of the timber were included in this list. I collected some species which have not been thought to enter the Arctic-Alpine Zone. Some of these undoubtedly belong there while a few have spread upward from the timber line owing to favorable local environments. In general, I find two localities in which the latter plants are to be found; one is the slope on which is located the pumping station at Windy Point, and the other is the glacial amphitheater which is partly occupied by Reservoir No. 7 of the Colorado Springs water system. Both these slopes are well watered throughout the growing season and are of southerly exposure, while huge boulders and outcropping ledges give ample protection from the drying and chilling winds that sweep the more exposed portions of the peak, and also serve as obstacles to the removal of the finer and richer soil, the products of both rock and vegetable decay.

A third area of upward extension is the boggy ground along the carriage road west of the peak, where I found some hydrophilous plants at 13,000 feet, which heretofore were not supposed to grow much above the timber line.

I found no edible vegetation of any consequence. *Fragaria glauca* ripened a few small, imperfect berries on a sunny bank just above the timber, while the leaves of *Caltha leptosepala* might serve for "greens," though I found them rather leathery. The fruits of most of the plants are dry and the seeds are small and contain little nourishment, though they are the chief food supply of the mice and rats and other rock-dwelling animals. Many species store reserve supplies in their thickened roots, from which they spring up quickly in the early summer, but I found none that were palatable or of any value for human food.

Allium pikeanum Rydb. occasionally bears pure white flowers.

Antennaria media Greene. Staminate plants of this species seem to be lacking on this peak, as diligent search in many different localities has failed to discover them.

Chamaenerion augustifolium (L.) Scop. occurs much higher than usually listed. But the colonies seem to spring up from windblown seed from below; they flower very late and probably never seed themselves in this zone, although the individuals may live over a winter or two.

Erigeron simplex Greene includes the small erigerons that have been referred to *E. uniflorus* L. as well as the larger forms referred to *E. leucotrichus* Rydb. I was convinced that these apparently different plants were of the same species, and inquiry of Dr. Rydberg brought me the information that *E. uniflorus* L. was not found in Colorado at all and that *E. leucotrichus* Rydb. was an unusually large form of *E. simplex* Greene, to which all these varying forms should be referred.

Gentiana plebeja Cham. [*Amarella plebeja* (Cham.) Greene] varies so as to be almost unrecognizable in some of its forms; occasionally almost white, it runs through many shades of blue and mauve to deep purple, and varies from a robust, branching plant to a single blossom flowering from the ground long after the first snows of autumn.

Lewisia pygmaea (A. Gray) Robins. [*Oreobroma pygmaea* (A. Gray) Howell] I find abundant in damp, gravelly situations rather than on dry mountain sides, as stated by some authors.

Mertensia alpina (Torr.) Don is known locally as "Pikes Peak forget-me-not." There is a rare pure white variety, the widely separated plants bearing all white clusters year after year.

Mertensia ciliata (Torr.) Don includes *M. picta* Rydb. and is the tallest plant above the timber line on Pikes Peak.

Ribes lentum (Jones) C. & R. has, in its alpine form, rosy rather than "greenish" flowers; it is quite a conspicuous plant on the edges but seldom bears fruit above the timber line.

Rhodiola integrifolia Raf. and *R. polygama* (Rydb.) B. & R. are separated with difficulty. While the extremes seem to be distinct, there are, on this mountain at least, many intermediate forms, some dioecious others polygamous, which seem to merge the two species into one. Plants that are polygamous one year may bear either staminate or pistillate heads alone the next season, and polygamous heads were found upon plants which I know bore unisexual flowers the year before.

Rubus strigosus Michx. occurs well above the timber in many places. But while it blossoms freely it rarely matures fruit on account of the early frosts and the depredations of the birds, which no doubt have brought the seeds of the existing plants up from below.

Salix brachycarpa Nutt. is the prevailing willow above the timber line, occurring as dwarfed shrubs well up toward the summit.

COLORADO SPRINGS, COLO.